### (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

## (19) World Intellectual Property Organization International Bureau





(43) International Publication Date 23 February 2006 (23.02.2006)

# T (10) International Publication Number WO 2006/018730 A1

(51) International Patent Classification: *F01L 9/04* (2006.01)

(21) International Application Number:

PCT/IB2005/002828

(22) International Filing Date: 4 August 2005 (04.08.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

2004-239776 19 August 2004 (19.08.2004) JF (71) Applicant (for all designated States except US): TOY.

(71) Applicant (for all designated States except US): TOY-OTA JIDOSHA KABUSHIKI KAISHA [JP/JP]; 1, Toy-ota-cho, Toyota-shi, Aichi-ken 471-8561 (JP).

(72) Inventor; and

(75) Inventor/Applicant (for US only): NISHIDA, Hideyuki [JP/JP]; c/o Toyota Jidosha Kabushiki Kaisha, of 1, Toyotacho, Toyota-shi, Aichi-ken 471-8571 (JP).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,

CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

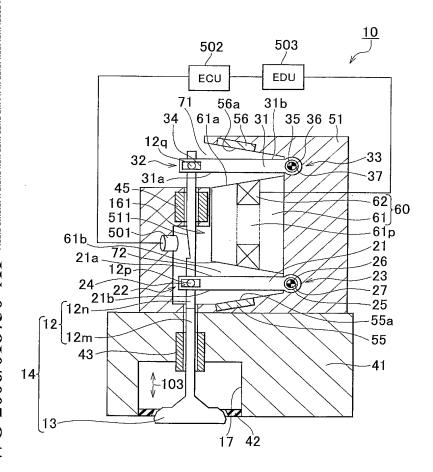
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

#### **Published:**

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

[Continued on next page]

(54) Title: ELECTROMAGNETICALLY DRIVEN VALVE



(57) Abstract: An electromagnetically driven valve (10) includes a drive valve (14) that is provided with a stem (12) serving as a valve stem and that reciprocates in a direction in which the stem (12) extends; a lower disk (21) serving as a first oscillating member and an upper disk (31) serving as a second oscillating member, each of which can oscillate by using a predetermined point in a disk base (51) as a supporting point, each of which is movably connected to the stem (12) at a first end (22, 32) and is movably supported by the disk base (51) at a second end (23, 33), and which are provided at a predetermined distance from each other; an electromagnet (60) which includes an open/close coil (62), and which is provided between the lower disk (21) and the upper disk (31); and a detector coil (501) which detects a position of at least one of the drive valve (14), the lower disk (21), and the upper disk (31). The electromagnetic force is applied to the lower disk (21) and the upper disk (31) when an electric current passes through the open/close coil (62). An amount of electric current that passes through the open/close coil (62) is determined based on the position of the drive valve (14) detected by the detector coil (501).

### 

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.